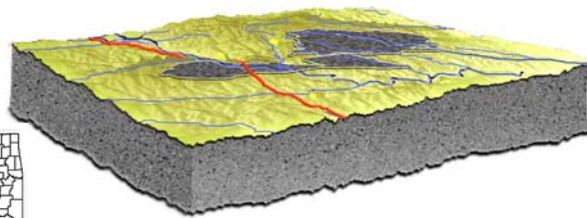


# Arbuckle-Simpson Hydrology Study

## Newsletter



THE OKLAHOMA WATER RESOURCES BOARD

January 2004

### Arbuckle-Simpson Study Update

In September, the U.S. Geological Survey installed stream gages on Pennington Creek and Blue River. Real-time stage height measurements for these and other USGS gages maintained in the region are available on the agency's Web site at <http://waterdata.usgs.gov/ok/nwis/>. (A link to this data is also provided on the OWRB's new Arbuckle-Simpson Web page.)

OWRB staff have identified 11 additional stream sites from which to collect periodic stream flow measurements, including river stage heights. Once the OWRB obtains easement agreements from the counties and private landowners allowing access to the land, wire-weight gages will be installed on bridges at various locations on the Blue River, Pennington Creek, Mill Creek, Honey Creek (downstream from Turner Falls), and Oil Creek. This work should conclude in February, with monitoring underway in February or March.

Staff are also preparing to conduct a synoptic base flow-measuring event of major tributaries issuing from the Arbuckle-Simpson aquifer. The purpose of this task is to gather information necessary in calculating the water budget and in modeling groundwater flow. The base flow of streams and springs will be measured during the winter months because pumping and evapotranspiration are at a minimum. However, the measurements must be collected when there has been no significant rainfall for 10 days. Staff hope to measure about 80 streams during the middle part of January.

Regarding groundwater monitoring, the OWRB plans to install water level recorders on 10 existing wells in the Arbuckle-Simpson region. Suitable locations have yet to be established. Other study-related activities include a review of historical precipitation records and water use reports for permits from the aquifer. OSU is also assisting the Water Board in a literature and data review of the region's hydrology. Under a cooperative agreement, the USGS will evaluate various modeling software and methodologies to use in developing a preliminary model to test conceptual understanding of the Arbuckle-Simpson's groundwater flow system.

Finally, on January 9, the OWRB and Bureau of Reclamation will cosponsor a meeting to solicit input from other state and federal agencies on the Arbuckle-Simpson study. The specific objectives of the meeting are to inform participants of ongoing activities and what is planned for the study and solicit feedback on ongoing or proposed activities in order to address potential areas of concern about the study.

### OWRB Asks Public for Study Area Information

As part of the agency's ongoing study of the Arbuckle-Simpson aquifer and associated water resources, the OWRB is soliciting information from area landowners and other citizens to augment the agency's database of water wells, springs, caves, and/or sinkholes in the area. If you know the whereabouts of any of these features in the Arbuckle region, please contact the OWRB at 405-530-8800 or access the agency's Web site ([www.owrb.state.ok.us](http://www.owrb.state.ok.us)) to download a site information form and send to:

Oklahoma Water Resources Board  
3800 N. Classen Blvd.  
Oklahoma City, OK 73118  
Fax: (405) 530-8900  
Attn: Leigh Cheatwood



Big Tom Spring, one of several mineralized springs in the Chickasaw National Recreation Area, a unit of the National Park System since 1906. Almost 100 springs are known to discharge water from the Arbuckle-Simpson aquifer.

### Visit the OWRB's New Study Web Page

The OWRB has created a Web page to provide background information on the Arbuckle-Simpson Study, as well as to keep the public informed of ongoing developments related to the investigation. To access the site, go to [www.owrb.state.ok.us](http://www.owrb.state.ok.us) and click on "The Arbuckle-Simpson Hydrology Study."

This is the first in a series of periodic newsletters to inform the public of current and future work related to the ongoing study of the Arbuckle-Simpson aquifer and other water resources in the region. To join the mailing list for this and other materials related to the study, call the OWRB at 405-530-8800.

## Meet the Arbuckle-Simpson Study Peer Review Team

Although coordinated by the OWRB, the Arbuckle-Simpson study will involve participation from dozens of agencies and organizations, as well as private citizens. A technical peer review team consisting of experts from the U.S. Geological Survey, Oklahoma Geological Survey, Oklahoma State University, and EPA will review the scope of work and provide advice to ensure the use of sound science and appropriate methods. The technical peer review team consists of the following members:

### • **Scott Christenson, USGS**

Christenson has a bachelor's degree in geology from the University of Illinois (Champaign) and a master's degree in geology from the University of Missouri (Columbia). He has been employed as a hydrologist by the Oklahoma District of the United States Geological Survey since 1977 and is currently the Oklahoma District Ground-Water Specialist. His areas of interest are quantitative groundwater hydrology and water quality.

### • **Dr. Neil H. Suneson, OGS**

Suneson is Assistant Director of Geological Programs with the Oklahoma Geological Survey, where he has worked for more than 17 years. Previously, he served as a development geologist with Chevron, USA, and as a geologist with the U.S. Geological Survey. Suneson's expertise is in field geology. He has authored or co-authored more than 25 geologic maps and at least 100 papers and books focusing on the Ouachita Mountains, Oklahoma City metro area, and northwest Oklahoma. He has led numerous field trips throughout Oklahoma for a variety of diverse groups, from conservation-oriented organizations to the petroleum industry. Suneson possesses a broad knowledge of Oklahoma geology and exhibits an intense research and public-service interest in the geologic issues facing the state.

### • **Dr. Randall R. Ross, EPA**

Ross received B.S. and M.S. degrees in Geology from Oklahoma State University, as well as a Ph.D. in Environmental Science from the University of Oklahoma. He has more than 17 years of service with the U.S. Environmental Protection Agency and currently serves as a hydrologist in the Applied Research and Technical Support Branch, Ground Water and Ecosystems Restoration Division, National Risk Management Research Laboratory at the Robert S. Kerr Environmental Research Center in Ada. His Branch at the Research Center serves as a focal point for the transfer of Laboratory research findings to the subsurface remediation community. Dr. Ross provides technical assistance to EPA personnel in the areas of containment and remediation of groundwater contamination at hazardous waste sites. His research interests include the application of innovative techniques and technologies to enhance the efficacy of groundwater containment and remediation systems, as well as the mechanics of recharge and groundwater flow associated with fractured rock aquifers.

### • **Dr. Todd Halihan, OSU**

Halihan is an Assistant Professor for the School of Geology at Oklahoma State University. His expertise includes site characterization and monitoring of karstic and fractured aquifers in both the U.S. (Missouri, Oklahoma, Texas, and Wisconsin) and abroad (Australia, Bahamas, and South Africa). He has developed several new tools for the analysis of these aquifers, including well analysis techniques and modeling of aquifer flow properties across a range of spatial scales. These methods include hydraulic and geophysical techniques that make use of GPR (ground penetrating radar) and Electrical Imaging techniques.

*Dick Scalf, retired Kerr Lab scientist from Ada, will serve as technical liaison between the peer review team and local interest groups.*



*Randall Ross investigates a sinkhole in the outcrop area of the Arbuckle-Simpson aquifer during a field trip by the peer review team to the area on November 24. Led by Randall Ross and Dick Scalf, the team visited several points of interest, including sinkholes, Byrds Mill Spring, Sheep Creek Spring, the new USGS gage on Pennington Creek, Devil's Den (on Pennington Creek), and the Nature Conservancy's Pontotoc Ridge Preserve.*

For digital data sets, visit the USGS  
Web site at [www.ok.cr.usgs.gov](http://www.ok.cr.usgs.gov).

For more information, visit the OWRB's  
Web site at [www.owrb.state.ok.us](http://www.owrb.state.ok.us).

